3.3.7.7 Southern Hardwood Swamp

3.3.7.7.1 Community Overview

This is a deciduous forested wetland community type found in insular basins with seasonally high water tables. This type is best developed in glaciated southeastern Wisconsin, but was not of large extent even prior to EuroAmerican settlement. Finley (1976) classified less than 1% of southeastern Wisconsin as lowland hardwood forest, and this figure includes bottomland forests along rivers as well as hardwood swamps in closed basins. Dominant tree species are red maple, green and black ashes, and formerly, American elm. Another species that also occurs in these forests is silver maple, as well as hybrids of red and silver maples. Southern hardwood swamps are noted for a high component of lianas, including poison ivy, Virginia creepers, and grapes. In the relatively undisturbed sites, there can be a rich spring flora. Microtopographic differences account for the existence of patches of spring ephemerals as well as many wetland species. The exotic reed canary grass has become dominant in the understory of many hardwood swamps.

This Natural Heritage Inventory community type partly includes the southern wet-mesic forest of the Curtis (1959) classification. Curtis describes these types as occurring on lake plains, both around the margins of larger existing lakes and on extinct glacial lakes. He referred to them as "lacustrine forests", and noted that their soils have a high organic matter content, approaching peat conditions. This differentiates them in part from floodplain forests where processes of flooding and scouring tend to remove organic detritus. Also, in floodplains, much of the water movement is lateral, while in hardwood swamps the water table tends to fluctuate vertically. Southern hardwood swamps are not necessarily restricted to lake plains; some occur in lower-lying portions of till plains that may not have held ponded water for any significant length of time during or after glaciation.

3.3.7.7.2 Vertebrate Species of Greatest Conservation Need Associated with Southern Hardwood Swamp

Fourteen vertebrate Species of Greatest Conservation Need were identified as moderately or significantly associated with southern hardwood swamp (Table 3-159).

Table 3-159. Vertebrate Species of Greatest Conservation Need that are (or historically were) moderately or significantly associated with southern hardwood swamp communities.

Species Significantly Associated with Southern Hardwood Swamp
Birds
Rusty Blackbird
Herptiles
Four-toed Salamander
Species Moderately Associated with Southern Hardwood Swamp
Birds
Yellow-crowned Night Heron
Yellow-billed Cuckoo
Herptiles
Pickerel Frog
Wood Turtle
Blanding's Turtle
Black Rat Snake
Timber Rattlesnake
Eastern Massasauga Rattlesnake
Mammals
Water Shrew
Northern Long-eared Bat
Eastern Red Bat
Woodland Jumping Mouse

In order to provide a framework for decision-makers to set priorities for conservation actions, the species identified in Table 3-159 were subject to further analysis. The additional analysis identified the best opportunities, by Ecological Landscape, for protection, restoration, and/or management of both southern hardwood swamp and associated vertebrate Species of Greatest Conservation Need. The steps of this analysis were:

- Each species was examined relative to its probability of occurrence in each of the 16 Ecological Landscapes in Wisconsin. This information was then cross-referenced with the opportunity for protection, restoration, and/or management of southern hardwood swamp in each of the Ecological Landscapes (Tables 3-160 and 3-161).

- Using the analysis described above, a species was further selected if it had both a significant association with southern hardwood swamp and a high probability of occurring in an Ecological Landscape(s) that represents a major opportunity for protection, restoration and/or management of southern hardwood swamp. These species are shown in Figure 3-38.

Table 3-160. Vertebrate Species of Greatest Conservation Need that are (or historically were) *significantly* associated with southern hardwood swamp communities and their association with Ecological Landscapes that support southern hardwood swamp.

Southern Hardwood Swamp	Birds (1)*	Herptiles (1)
Ecological Landscape grouped by opportunity for management, protection, and/or restoration of this community type	Rusty Blackbird	Four-toed Salamander
MAJOR		
Southeast Glacial Plains		
IMPORTANT		
Southern Lake Michigan Coastal		
PRESENT (MINOR)		
Central Lake Michigan Coastal		
Western Coulee and Ridges		

Color Key

= **HIGH probability the species occurs in this Ecological Landscape**

= **MODERATE probability the species occurs in this Ecological Landscape**

= **LOW or NO probability the species occurs in this Ecological Landscape**

*** The number shown in parentheses is the number of Species of Greatest Conservation Need from a particular taxa group that are included in the table. Taxa groups that are not shown did not have any Species of Greatest Conservation Need that met the criteria necessary for inclusion in this table.**

Table 3-161. Vertebrate Species of Greatest Conservation Need that are (or historically were) *moderately* associated with southern hardwood swamp communities and their association with Ecological Landscapes that support southern hardwood swamp.

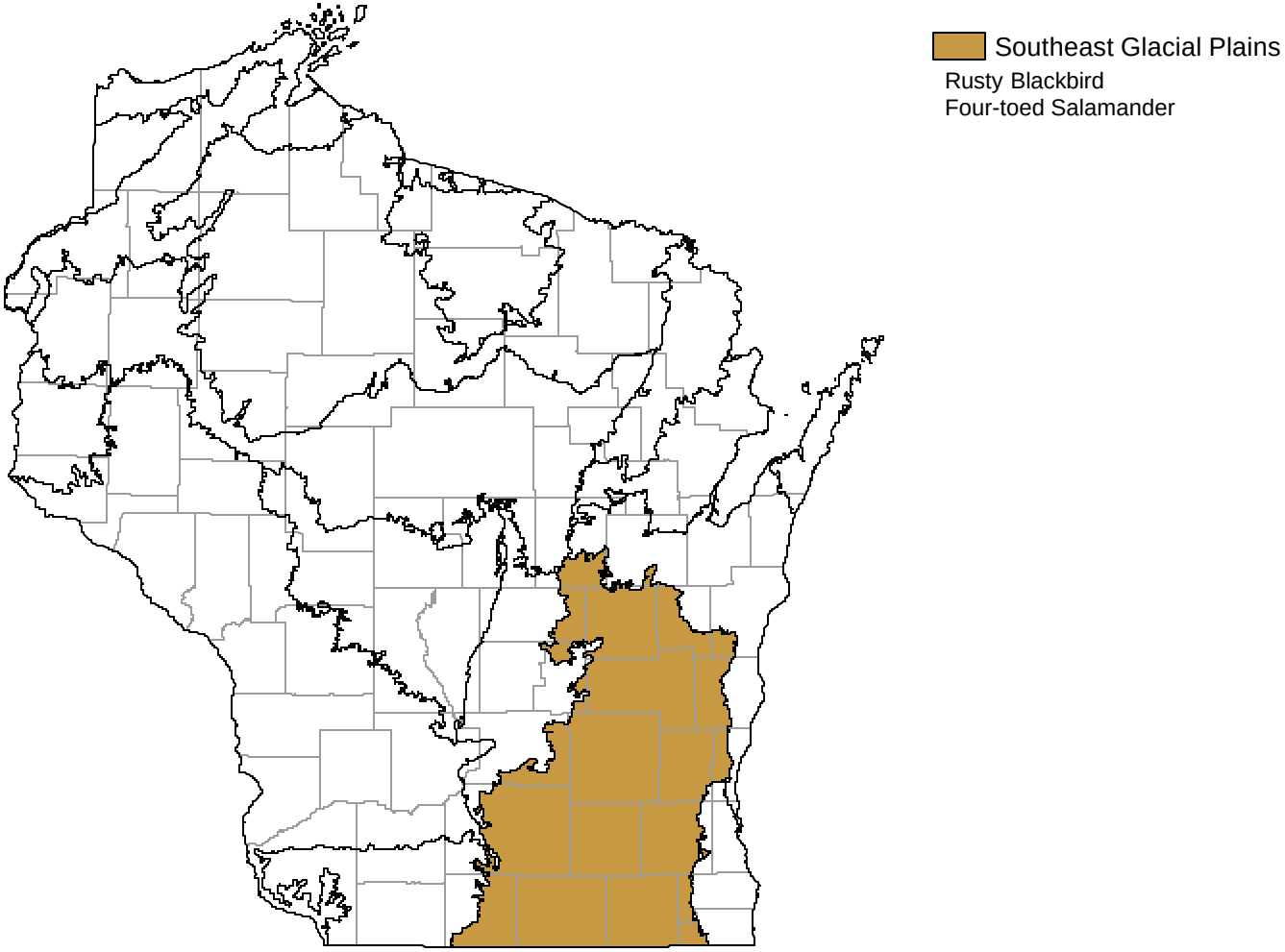
Southern Hardwood Swamp	Birds (2)*		Herptiles (6)						Mammals (4)			
Ecological Landscape grouped by opportunity for management, protection, and/or restoration of this community type	Yellow-crowned Night-Heron	Yellow-billed Cuckoo	Pickerel Frog	Wood Turtle	Blanding's Turtle	Black Rat Snake	Timber Rattlesnake	Eastern Massasauga Rattlesnake	Water Shrew	Northern Long-eared Bat	Eastern Red Bat	Woodland Jumping Mouse
MAJOR												
Southeast Glacial Plains												
IMPORTANT												
Southern Lake Michigan Coastal												
PRESENT (MINOR)												
Central Lake Michigan Coastal												
Western Coulee and Ridges												

Color Key

- = **HIGH probability the species occurs in this Ecological Landscape**
- = **MODERATE probability the species occurs in this Ecological Landscape**
- = **LOW or NO probability the species occurs in this Ecological Landscape**

*** The number shown in parentheses is the number of Species of Greatest Conservation Need from a particular taxa group that are included in the table. Taxa groups that are not shown did not have any Species of Greatest Conservation Need that met the criteria necessary for inclusion in this table.**

Figure 3-38. Vertebrate Species of Greatest Conservation Need that have *both* a significant association with southern hardwood swamp *and* a high probability of occurring in an Ecological Landscape(s) that represents a major opportunity for protection, restoration and/or management of southern hardwood swamp.



3.3.7.7.3 Threats and Priority Conservation Actions for Southern Hardwood Swamp

3.3.7.7.3.1 Statewide Overview of Threats and Priority Conservation Actions for Southern Hardwood Swamp

The following list of threats and priority conservation actions were identified for southern hardwood swamp in Wisconsin. The threats and priority conservation actions described below apply to all of the Ecological Landscapes in Section 3.3.7.7.3.2 unless otherwise indicated.

Threats and Issues

- Threats to these communities include past land use conversion to agriculture, including ditching, which has altered hydrology and contributed to sedimentation, nutrient loading, and pollution. These impacts lead to changes in vegetative composition and encourage invasive plants, particularly reed canary grass.
- Agriculture and development have isolated the swamp forests, which formerly occurred within a landscape matrix of oak savanna, oak or maple forests, and open wetlands.
- Grazing has led to additional simplification, and encouraged the expansion of invasive plants.
- Unsustainable forest management practices can alter species composition, or result in loss of forests to reed canary grass.
- Silvicultural techniques do not provide consistent regeneration of the swamp hardwood forest. More information is needed to manage this type, which may be in a phase of reorganization due to the loss of American elm as an overstory species in the aftermath of Dutch Elm Disease. These sites are vulnerable to invasions of non-native species when the canopy is opened.
- The emerald ash borer is a major threat to ash trees, and their loss could lead to further changes in composition and function of these communities.
- Invasive strains of giant reed grass could become a problem in these communities in the future.

Priority Conservation Actions

- Preserve the few existing sites; protect them from hydrologic changes, and from runoff that contributes to sedimentation, nutrient loading, and pollution.
- Use buffers to reduce sedimentation.
- Use management practices that do not lead to the spread of reed canary grass and other invasive species.
- Limit development around existing and restorable sites.
- Where possible, manage this community type within a matrix of other forest types, savannas, surrogate grasslands and other semi-natural habitats.
- Manage as large blocks, or maintain and restore connectivity to other hardwood swamps where possible.
- Prevent grazing.
- Develop monitoring systems and support research that will lead to a better understanding of the composition, disturbance regimes, and dynamics that are part of this system.
- Research into silvicultural systems is needed to sustainably manage and regenerate these forests.
- Additional inventory work is needed to locate and document existing or restorable sites.

3.3.7.7.3.2 Additional Considerations for Southern Hardwood Swamp by Ecological Landscape

Special considerations have been identified for those Ecological Landscapes where major or important opportunities for protection, restoration, and/or management of southern hardwood swamp exist. Those considerations are described below and are in addition to the statewide threats and priority conservation actions for southern hardwood swamp found in Section 3.3.7.7.3.1.

Additional Considerations for Southern Hardwood Swamp in Ecological Landscapes with ***Major*** Opportunities for Protection, Restoration, and/or Management of Southern Hardwood Swamp

Southeast Glacial Plains

The North Unit of the Kettle Moraine State Forest includes some acreage of the southern hardwood swamp community type, though the area also includes species such as yellow birch and occasionally northern white cedar that are typically found in northern hardwood swamps. In this Ecological Landscape, the southern hardwood swamp type tends to be transitional to more northern types; this may be, in part, a tension zone effect. The Cedarburg Bog area contains occurrences of this type adjacent to conifer bogs, and they are also found in a hydrologically connected wetland to the north of the string bogs. Huiras Lake in Washington County is a site with swamp hardwoods occurring around an undeveloped lake and its associated conifer swamp. Intact or high-quality hardwood swamps are very rare. More survey work and better documentation are needed, and restoration techniques should be developed for degraded sites.

Additional Considerations for Southern Hardwood Swamp in Ecological Landscapes with ***Important*** Opportunities for Protection, Restoration, and/or Management of Southern Hardwood Swamp

Southern Lake Michigan Coastal

Whitnall Park Woods, in the city of Franklin and village of Hales Corners, contains patches of southern hardwood swamp. Limited opportunities occur in some of the basins and perhaps in association with smaller streams which lack well-developed floodplains. Additional inventory work is needed.